

Listing of Claims:

Claims 1 to 3 (cancelled).

Claim 4 (currently amended) A compound of claim 21 selected from the group consisting of 3-(3-dodecanoyloxytetradecanoylamino) 9-(3-hydroxytetradecanoylamino)-4-oxo-5-azadecan-1, 10-diol, the 1-dihydrogen phosphate thereof and the 1,10-bis-(dihydrogenphosphate) thereof, as well as the and its addition salts ~~formed~~ with an organic or a mineral base.

Claim 5 (currently amended) A compound of claim 21 selected from the group consisting of 3-(3-dodecanoyloxy-tetradecanoylamino) 9-(3-hydroxytetradecanoylamino)-4-oxo-5-azadecan-1, 10-diol 1,10-bis-(dihydrogenphosphate) and its addition salts ~~formed~~ with an organic or a mineral base.

Claim 6 (currently amended) A compound of claim 21 selected from the group consisting of 3-(3-hydroxytetradecanoylamino) 9-(3-dodecanoyloxytetradecanoylamino)-4-oxo-5-azadecan-1, 10-diol 1,10-bis-(dihydrogenphosphate) and its addition salts ~~formed~~ with an organic or a mineral base.

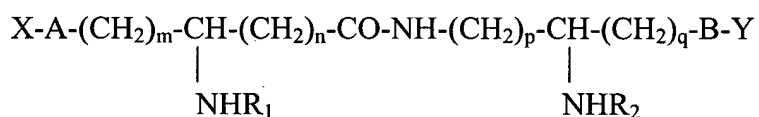
Claim 7 (currently amended) A compound of claim 21 selected from the group consisting of 3-(3-dodecanoyloxytetradecanoylamino) 9-(3-hydroxytetra-

decanoylamino)-4-oxo-5-azadecan-1, 10-diol mono 1-dihydrogenphosphate and its addition salts ~~formed~~ with an organic or a mineral base.

Claim 8 (currently amended) A compound of claim 21 selected from the group consisting of 3-(3-hydroxytetradecanoylamino) 9-(3-dodecanoyloxy-tetradecanoylamino)-4-oxo-5-azadecan-1, 10-diol mono 1-dihydrogenphosphate and its addition salts ~~formed~~ with an organic or a mineral base.

Claims 9 to 15 (cancelled)

Claim 16 (currently amended) A pharmaceutical composition containing as an active ingredient at least one compound of the formula I in accordance with claim 21:



(I)

wherein R₁ and R₂ each ~~designate being~~ an acyl group derived from a saturated or unsaturated[, chain-] carboxylic acid ~~having from~~ of 2 to 24 carbon atoms, which is unsubstituted or substituted with at least ~~bears one or more~~ substituents selected from the group consisting of hydroxyl, alkyl, alkoxy, acyloxy, amino, acylamino, acylthio and ((C₁₋₂₄)alkyl)thio ~~group substituents~~,

m, p and q are integers from 1 to 10,

n is an integer from 0 to 10,

X and Y each ~~designate~~ are hydrogen or an acid group either in neutral or charged form,

A and B₇ are individually oxygen, sulfur or imino,

together or in admixture with a non-toxic, pharmaceutically acceptable, inert ~~excipient or~~ carrier.

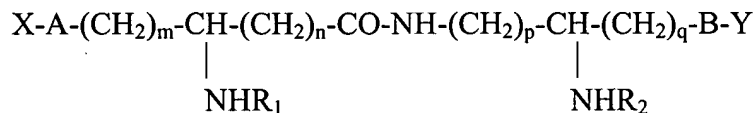
Claim 17 (currently amended) The pharmaceutical compositions in accordance with; claim 16, wherein the compound of formula I is a compound of the type where X and/or Y ~~designate a~~ are phosphono radical and further A and B ~~designate~~ are an oxygen atom.

Claim 18 (previously presented) The pharmaceutical composition in accordance with claim 17, wherein the active ingredient is in salt form with an organic or mineral base intended for therapeutic use.

Claim 19 (currently presented) The pharmaceutical composition ~~in accordance with~~ of claim 16, wherein the active ingredient is in the form of a pure enantiomer or in the form of a mixture of stereoisomers.

Claim 20 (cancelled)

Claim 21 (currently amended) A N-acyl-dipeptidic compound of the formula



(I)

wherein R₁ and R₂ are each an acyl moiety of a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms unsubstituted or substituted with at least one member selected from of the group consisting of [-OH] hydroxyl, alkyl and alkoxy of 1 to 24 carbon atoms, [-NH₂] amino, acyloxy of an organic carboxylic acid of 1 to 24 carbon atoms and acylamino and acylthio of a carboxylic acid of 1 to 24 carbon atoms and alkylthio of 1 to 24 carbon atoms, m, n, p and q are independently integers from 1 to 10, n is an integer from 0 to 10, X and Y are independently hydrogen or an acid group selected from the group consisting of [carboxyalkyl of 1 to 5 carbon atoms, -CH-[(CH₂)_{m'}-COOH]-[(CH₂)_{n'}-COOH] where m' and n' are individually integers of 0 to 5, phosphonoalkyl of 1 to 5 carbon atoms, dihydroxyphosphonyloxyalkyl of 1 to 5 carbon atoms, dimethoxyphosphonyl, phosphonyl, hydroxy sulfonyl and hydrosulfonyloxyalkyl of 1 to 5 carbon atoms]

-carboxy [(C₁₋₅)alkyl]

-CH-[(CH₂)_{m1}COOH][(CH₂)_{n1}COOH] with m₁ = 0 to 5 and n₁ = 0 to 5

- phosphono [(C₁₋₅)alkyl]

-dihydroxyphosphoryloxy[(C₁₋₅)alkyl]

-dimethoxyphosphoryl

-phosphono

-hydroxysulfonyl

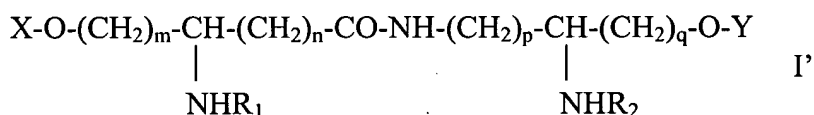
-hydroxysulfonyl[(C₁₋₅)alkyl]

- hydroxysulfonyloxy [(C₁₋₅)alkyl]

in neutral or charged form with provided that at least one of the substituents X and Y ~~being~~ is other than hydrogen and A and B are individually selected from the group consisting of oxygen, sulfur and -NH-.

Claim 22 (currently amended) A compound of claim 21 wherein at least one of X and Z Y is other than hydrogen in salt form with a non-toxic, pharmaceutically acceptable base.

Claim 23 (currently amended) A compound of claim 21 having the formula



wherein R₁ and R₂ are individually an acyl moiety ~~of~~ derived from a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms, unsubstituted or substituted with at least one member selected from ~~of~~ the group consisting of [-OH] hydroxyl, alkyl and alkoxy of 1 to 24 carbon atoms, [-NH₂] amino, acyloxy of an organic carboxylic acid of 2 to 24 carbon atoms and acylamino and acylthio of an organic carboxylic acid of 2 to 24 carbon ~~atom~~ atoms and alkylthio of 1 to 24 carbon atoms, m, p and q are individually integers from 1 to 10, n is an integer from 0 to 10 and X and Y are individually hydrogen or phosphono.

Claim 24 (currently amended) A compound of formula I of claim 21 containing elements having an (R) or (S) configuration, and or racemates thereof.

Claim 25-26 (cancelled)

Claim 27 (currently amended) The process of claim 25 32 wherein the product of formula (I) is further reacted with an organic or mineral base to form the salt thereof.

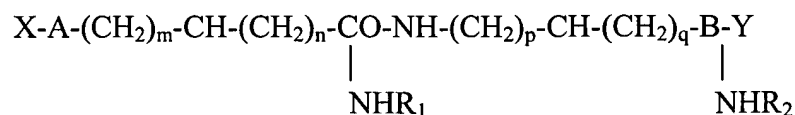
Claim 28 (currently amended) The process of claim 26 32 wherein the ~~product is further reacted with a base to form the salt thereof~~ the salt formation step is carried out with a mineral or an organic base intended for therapeutic use.

Claim 29 (currently amended) The process of claim 25 32 wherein R₁-OH is 3-dodecanoyloxytetradecanoic acid.

Claim 30 (currently amended) The process of claim 25 32 wherein R₂-OH is 3-hydroxytetradecanoic acid.

Claim 31 (currently amended) ~~The method of inducing immune modulation in warm-blooded animals in need thereof comprising administering to said warm-blooded animals an immuno-modulating effective amount of a compound of claim 21~~ A method of modulating immune response in warm-blooded animals in need of an immune response an amount of a compound of claim 21 sufficient to modulate the immune response.

Claim 32 (new) The method for obtaining a dipeptide-like compound of formula I of claim 21:



(I)

wherein R₁ and R₂ each are an acyl moiety derived from a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms which is unsubstituted or substituted with at least one substituent selected from the group consisting of hydroxyl, alkyl, alkoxy, acyloxy, amino, acylamino, acylthio and ((C₁₋₂₄)alkyl)thio,

wherein at least one of R₁ or R₂ is an acyloxyacyl,

m, p and q are integers from 1 to 10,

n is an integer from 0 to 10,

X and Y each are hydrogen or an acid group selected from the group consisting of:

- carboxy [(C₁₋₅)alkyl]
- CH-[(CH₂)_{m1}COOH] [(CH₂)_{n1}COOH] with m₁= 0 to 5 and n₁ = 0 to 5
- phosphono [(C₁₋₅)alkyl]
- dihydroxyphosphoryloxy[(C₁₋₅)alkyl]
- dimethoxyphosphoryl
- hydroxysulfonyl

- hydroxysulfonyl[(C₁₋₅)alkyl]
- hydroxysulfonyloxy [(C₁₋₅)alkyl]
- phosphono

either in neutral or charged form,

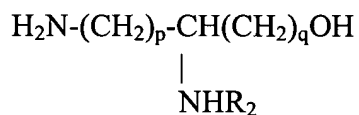
provided that at least one of X and Y is an acid group as specified above, either in neutral or charged form,

A and B have the meanings as specified above,

wherein the amino functional groups in positions (q+1) and ω of a diamino acid of formula $\text{H}_2\text{N}(\text{CH}_2)_p\text{CHNH}_2(\text{CH}_2)_{q-1}\text{COOH}$ are blocked by a blocking reagent which undergoes acidolysis and hydrogenolysis, respectively, the carboxylic functional group still in free form is reacted with a reducing agent to yield the corresponding alcohol, the amino functional group in position (q+1) is freed and then acyl-substituted with a carboxylic acid functional derivative of formula R_2OH ,

wherein R_2 is as defined above,

the terminal amino functional group is subsequently freed by hydrogenolysis to yield a diamino alcohol of the formula

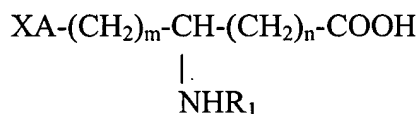


(II)

wherein R_2 is an acyl group derived from a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms, which is unsubstituted or substituted by at least one substituent as defined above,

p and q are an integer from 1 to 10,

said diamino alcohol is condensed in the presence of a peptide condensing agent in an inert solvent together with a carboxylic acid selected from the group consisting of a ω -hydroxy-amino acid, a ω -amino-amino-acid and a ω -thio amino acid of the formula



(III)

wherein R_1 is an acyl group derived from a saturated or unsaturated, carboxylic acid of 2 to 24 carbon atoms, which is unsubstituted or substituted by at least one substituent as defined above

m is an integer from 1 to 10,

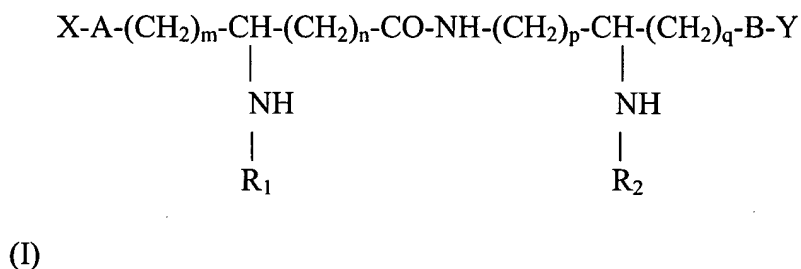
n is an integer from 0 to 10,

A is oxygen, sulfur or imino

and X is an acid radical as specified previously which is optionally in an ester form

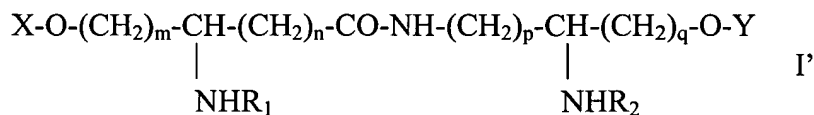
to yield a dipeptide-like compound of the formula

wherein R_1 , R_2 , n , m , p and q have the meanings as specified above,
the alcohol functional group of which is alkylated or acylated or otherwise substituted by an alkylating or acylating or an otherwise substitution reagent, in the presence of a coupling agent, and subjected to a catalytic hydrogenation or some other deprotection method, to obtain a compound of the formula



wherein A , B , X , Y , R_1 , R_2 , n , m , p and q have the meanings as those given above.

Claim 33 (new) A method for obtaining a phosphodi-peptide-like compound of the formula in accordance with claim 23



wherein R_1 and R_2 each are an acyl group derived from a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms which is unsubstituted or substituted by at least one substituent selected from the group consisting of hydroxyl, alkyl, alkoxy, acyloxy, amino, acylamino, acylthio and $((C_1-C_{24})alkyl)thio$,

m , p and q are integers from 1 to 10,

n is an integer ranging from 0 to 10,

X and Y each are hydrogen or phosphono either in neutral or charged form,

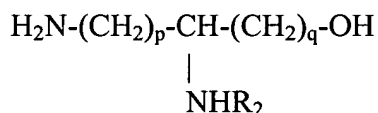
wherein the amino functional groups in positions $(q+1)$ and ω of the diamino acid of formula $H_2N(CH_2)_pCH(CH_2)_{q-1}COOH$



are blocked by blocking reagents which undergo acidolysis and hydrogenolysis, respectively, the carboxylic functional group still in free form is reacted with a reducing agent to yield the corresponding alcohol, the amine functional group in position $(q+1)$ is freed and then acyl-substituted by means of a carboxylic acid functional derivative of formula R_2OH

wherein R_2 is as defined above,

the terminal amino functional group is subsequently freed by hydrogenolysis to yield the amino-alcohol of the formula

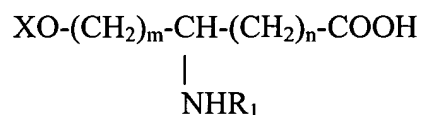


(II)

wherein R₂ is an acyl group derived from a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms, which is unsubstituted or substituted by at least one substituent as specified above,

p and q are an inter from 1 to 10

said amino-alcohol is condensed in the presence of a peptide condensing agent in an inert solvent together with a ω-hydroxy amino acid of the formula



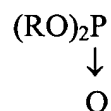
(III')

wherein R₁ is an acyl group derived from a saturated or unsaturated carboxylic acid of 2 to 24 carbon atoms, which is unsubstituted or substituted by at least one substituent as specified above,

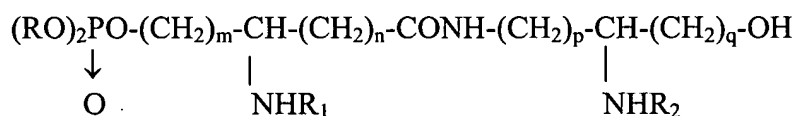
m is an integer from 1 to 10,

n is an integer from 0 to 10,

and X is a dialkyloxy- or diaryloxy-phosphoryl of the formula



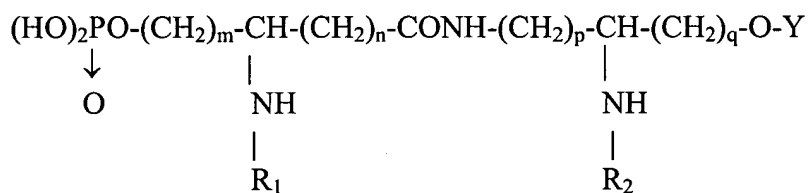
to yield the peptide-like compound of the formula



(IV')

wherein R_1 , R_2 , m , n , p and q are as defined above, and R is a group which undergoes hydrogenolysis or hydrolysis,

the alcohol functional group of which can be phosphorylated by a phosphorylating agent in the presence of a coupling agent and subjected to a two-step catalytic hydrogenation to unblock the alcohol functional group optionally present on the acyl R_2 and the phosphate functional group and the second optionally present phosphate functional group of which can be subsequently unblocked by hydrogenolysis to obtain a compound of the formula



(V)

wherein Y is either hydrogen or phosphono and R_1 , R_2 , m , n , p and q have the above-given definitions.